

CLAIMS

1. A solid-state imaging apparatus comprising:

5 a pixel array that includes a plurality of pixels in a two-dimensional array;

an AD memory that includes a plurality of unit memories in a two-dimensional array corresponding to a pixel arrangement in the pixel array, each unit memory including an AD converter circuit,

10 a pixel-array scanning circuit that scans the pixel array to read analog signals from the individual pixels to the AD memory; and

a memory scanning circuit that scans the AD memory to output digital signals from the individual unit memories.

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2. The solid-state imaging apparatus according to claim 1, further comprising an output unit that processes the digital signals output from the AD memory and outputs the processed signals to the exterior of the apparatus.

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3. The solid-state imaging apparatus according to claim 1, wherein the individual pixels in the pixel array correspond to the individual unit memories in the AD memory in a one-to-one relationship.

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4. The solid-state imaging apparatus according to claim 1, wherein the individual pixels in the pixel array correspond to the individual unit memories in the AD memory in an N-to-one relationship wherein $N \geq 2$.

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5. The solid-state imaging apparatus according to claim 1, wherein the pixel-array scanning circuit reads the signals from the pixel array to the AD memory, the AD memory then carries out AD conversion on the signals, and the memory
10 scanning circuit then outputs the signals from the AD memory.

6. The solid-state imaging apparatus according to claim 1, wherein AD conversion is simultaneously carried out for all the unit memories in the AD memory.

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7. The solid-state imaging apparatus according to claim 1, wherein the signals are read from the pixel array to the AD memory pixel row by pixel row, and AD conversion is simultaneously carried out for all the unit memories in the
20 AD memory.

8. The solid-state imaging apparatus according to claim 1, wherein the unit memories comprise DRAMs.

25 9. A solid-state imaging apparatus comprising:

a pixel array that includes a plurality of pixels in a two-dimensional array; and

an AD memory that stores signals read from the pixel array and carries out AD conversion on these signals,

5 the AD memory including a plurality of unit memories at least in a two-dimensional array, and

the plurality of unit memories simultaneously carrying out AD conversion on signals from at least two rows of pixels.

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10. The solid-state imaging apparatus according to claim 9, wherein the plurality of unit memories simultaneously carry out AD conversion on signals that are obtained by combining signals read from the pixel array.

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11. The solid-state imaging apparatus according to claim 9, wherein the unit memories carry out noise removal and AD conversion on the signals from the pixel array.